physicians and 55% for residents physicians. Similarly the accuracy was higher in the ambulatory setting than for inpatient, 89% vs. 62%. The yield for the HTN group was also higher with attendings than residents, 100% vs. 67%, and the yield was higher in ambulatory versus inpatient settings, 87% vs. 64%. **CONCLUSIONS:** CDS based on medication orders during CPOE may improve problem lists. The accuracy and yield of diagnostic information is sensitive to medication type, clinical venue and possibly clinician type. Mandatory indication based prescribing may not produce very accurate indication data. There is a substantial need for further research in this area.

PCV96

TREND IN THE UTILIZATION OF PHARMACOLOGICAL AND NON-PHARMACOLOGICAL TREATMENT STRATEGIES IN THE MANAGEMENT OF NEWLY DIAGNOSED ATRIAL FIBRILLATION PATIENTS IN THE UNITED STATES

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OBJECTIVES: Treatment strategies for atrial fibrillation (AF) are classified into rate control and rhythm control. They can be employed through the use of pharmacological and non-pharmacological approaches. This study described the trend in the utilization of treatment strategies for the management of AF in newly diagnosed patients between 1999 and 2008. **METHODS:** The study was a retrospective cohort study of administrative claims data from a large nationally dispersed group of commercially insured subjects from 1999-2008. Newly diagnosed AF patients aged ≥18 years and with at least one claim for an AF related intervention within 12 months of diagnosis were identified. Based on initial treatment received, patients were classified in pharmacotherapy or non-pharmacotherapy treatment groups. Patients initiated on drug-therapies were classified into rate-control (beta-blocker, calcium channel blocker or digoxin) or rhythm control groups. Descriptive analysis was conducted to compare the patient demographic characteristics across the treatment groups. OLS regression was conducted to assess linear trends. **RESULTS:** Of the 6284 newly diagnosed AF patients who received treatment within one-year, 83.7% underwent pharmacotherapy as the 1st line therapy. Majority (86.3%) of patients who initiated drug therapy received rate-control medications only. Relative distribution of different treatments across time did not vary significantly. However, within rate-control group, beta-blockers use increased significantly ($p < 0.0001$) from 47.5% (1999) to 70.58% (2008), whereas use of calcium channel blockers and digoxin decreased. Non-pharmacotherapy was employed more commonly in the mid-west (44.95%, $p < 0.0002$), in patients younger than 65 years (58.35%, $p < 0.0001$) and its use decreased with increasing age. Males were more likely to undergo non-pharmacotherapy (69.9%, $p < 0.0001$). **CONCLUSIONS:** Higher utilization of rate control as 1st line therapy compared to other treatment strategies is consistent with the current literature. Greater use of non-pharmacotherapy in younger patients can be partially explained by the higher success rate in this population.

PCV97

IS CARDIOVASCULAR MEDICATION USAGE A MARKER FOR CARDIOVASCULAR RISK? POTENTIAL IMPLICATION FOR SMART-EDIT FORMULARY MANAGEMENT STRATEGIES

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BACKGROUND: In the current statin landscape, a need has emerged for simple and less data-intensive tools to identify patients at risk for cardiovascular events and to appropriately identify patients for higher-efficacy statin use. **OBJECTIVES:** To examine the feasibility of a pharmacy-based algorithm as a marker of cardiovascular risk to guide appropriate statin selection at the point of service. **METHODS:** A retrospective analysis using an integrated database of over 70 pooled health plans was conducted for the period 2003 to mid-2010. Patients on at least one cardiovascular medication of interest (N= 4,276,418) and ≥18 years old were matched by age and gender to control subjects (not on cardiovascular medications [N= 3,046,021]). Cardiovascular medications included were antihypertensive, antidiabetic, antianginal, antiarrhythmic, anticoagulant, non-statin lipid modifier, and antiplatelet drugs. Subjects' cardiovascular risk status (high/moderate/low) was assessed according to the current National Cholesterol Education Program guidelines, from records of diagnoses and procedures. Relative risks were calculated for the likelihood of being at increased risk (high or moderate risk status) as the ratio of proportions of patients on cardiovascular medication versus controls who were at increased risk. **RESULTS:** The study population had a mean age of 53 years. Overall, a patient receiving any cardiovascular medication was 2.4 times more likely to be at increased risk (95%CI 2.39,2.40) and was 2.7 times more likely to experience a cardiovascular event (95%CI 2.73,2.74) than a subject not receiving any cardiovascular medication. Additionally, it was observed that 27% of the total patients in the health plans who were on cardiovascular medications accounted for 71.5% of all cardiovascular events in that group. **CONCLUSIONS:** A pharmacy algorithm based on usage of various cardiovascular medications can be used to identify increased cardiovascular risk. These initial findings demonstrate the potential of using widely available cardiovascular prescription data in designing statin formulary management strategies.

PCV98

USE OF ELECTRONIC MEDICAL RECORDS TO ASSESS THE CLINICAL AND ECONOMIC IMPACT OF NON-MEDICAL SWITCHING BETWEEN DIFFERENT ANGIOTENSIN RECEPTOR BLOCKERS (ARBS)

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OBJECTIVES: Electronic medical records (EMRs) increasingly are being used by outcomes researchers to study the quality of medical care. The study assessed the impact of non-medical switches in ARB therapy on blood pressure (BP) and medical resource utilization including office visits and other antihypertensive medications. **METHODS:** A retrospective study was conducted using the GE Centricity EMR of a primary care physicians group. Hypertensive patients >18 years, continuously enrolled, and receiving ARB therapy were included. Switch must have occurred after the patient was on the first ARB for at least 60 days. The control group remained on the same ARB and did not switch. A 1:1 matching was done on the duration of initial ARB therapy and presence of diabetes or renal impairment. Demographic characteristics, clinical parameters, ARB use, and office visits were identified. Data was extracted using Microsoft SQL and statistical analyses were conducted using SPSS version 18.0. **RESULTS:** A total of 4,851 patients (mean age 68.23 years, female 58.1%) were prescribed an ARB between 2004 and 2008 out of which 3,083 (63.6%) stayed on one ARB and 1,768 (36.4%) switched from one ARB to another. Matched pairs of switchers (n=357) and control group (n=357) were then identified. There was no difference in mean baseline systolic BP (SBP) for switchers (143.79+21.22) and control (144.20+22.16) but switchers had higher post-switch SBP (141.06+18.52) than control (137.97+20.58) ($p=0.035$). More switchers lost control from index to first visit post-index period (11.5%) than control (8.7%). More antihypertensive agents were added in switchers (1.91+1.7) than control (1.02+1.2) in the post-index period ($p<0.001$). **CONCLUSIONS:** EMRs have the potential to bridge research with clinical care by providing real-world data. This study demonstrates that non-medical switches may result in loss of BP control and additional medical resource use. Thus, careful consideration should be given before switching therapies for non-medical reasons.

PCV99

MEDICAL RESOURCE UTILIZATION AND COSTS FOLLOWING HOSPITALIZATION OF PATIENTS WITH CHRONIC HEART FAILURE IN THE UNITED STATES

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OBJECTIVES: The study objective was to determine medical resource utilization and direct and indirect costs following hospitalization with chronic heart failure (HF). **METHODS:** Patients with ≥1 hospitalization with a chronic HF claim (ICD-9 428.22, 428.32 or 428.42) were identified in a US commercial insurance claims database from 2004-2008. Patients were observed from beginning of first hospitalization (index hospitalization) for chronic HF until disenrollment or end of data availability. Inpatient, outpatient, and prescription drug data were used to estimate per patient per month (PPPM) utilization rates. Costs (2009 USD) were calculated per hospitalization and PPPM for patients ≤65 years, and included insurers' reimbursement, patient out-of-pocket and sick leave costs. **RESULTS:** There were 7,814 patients (mean age 73.2 years, 55.7% male) meeting inclusion criteria. Mean HF hospitalization length of stay increased from 6.7 days at index hospitalization to 8.2 days at fourth re-hospitalization. Rate of HF-related re-hospitalization remained over 0.045 PPPM throughout 24 months of follow-up, accounting for over 78% of all-cause hospitalizations. Rate of all-cause and HF-related outpatient visits peaked at 4.0 and 0.59 visits PPPM, respectively, within the three months after index hospitalization. Index hospitalization was most expensive (direct medical costs=$31,998). Patient out-of-pocket costs accounted for less than 10% of direct hospitalization costs and sick leave costs were less than $1,800 at any hospitalization. During the study period, outpatient cardiovascular drugs accounted for a small proportion of total pharmacy costs (approximately 20%); average PPPM cost varied from $88 to $124, representing less than 1% of the average cost of a HF-related hospitalization. **CONCLUSIONS:** Treating chronic HF patients is resource intensive. The greatest utilization and cost burden occur within the three months after index hospitalization and patients continue to be burdened after hospitalization by high inpatient and outpatient visit rates.

PCV100

HEALTH CARE UTILIZATION AND COSTS FOR A MEDICATION THERAPY MANAGEMENT (MTM) PROGRAM

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OBJECTIVES: 1) To determine costs and utilization incurred by employees following enrollment in an employer-sponsored medication therapy management (MTM) program and 2) to assess the impact of attrition on health care expenditures. **METHODS:** A longitudinal study using medical claims. Study participants were Lucas County employees with diabetes, hypertension and/or hyperlipidemia participating in an employer-sponsored open-enrollment MTM program. Claims for office, emergency room and inpatient visits were analyzed for the period of January 2005-July 2010. Disease-related expenditures were tracked for a period of two-year pre- and post enrollment. All expenditures were calculated as average costs per-patient pre and post joining and also as total expenditure borne by the employer. Dropouts were identified from an appointment database. Expenditures were calculated using claims for one year before and after the dropout date. **RESULTS:** Claims were received for 361 employees that enrolled in the MTM program. Office visit expenses went down by $71,442.29 or by 22.36% after joining the MTM program. An increase in spending for emergency room visits by $12,597.16 was observed, there were no recurring post-enrollment visits and those that occurred were for indications that could have increased long-term spending for the employer. Total expenditure on inpatient visits went up by approximately $7600 but the amount spent on each visit went down from $7,746.36 ± 4,169.13 to 4,408.07 ±

6,204.77.Number of employees who had an inpatient visit increased from 3 to 7, with no recurrence of pre-visit events. A decrease in total health care expenditures by over 14% was observed. Preliminary analysis for the second objective shows that on average employees spent $406.97/patient/year more when they dropped out of the program than if they stayed enrolled. **CONCLUSIONS:** Pharmacist led MTM-program helped reduce health care expenditure for the employer. Improving retention for the program could help substantiate these cost savings.

PCV101

EXPLORING GENDER DISPARITIES IN PREVENTIVE CARE UTILIZATION AMONGST THE UNITED STATES POPULATION

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OBJECTIVES: To identify existing gender differences in utilization of preventive care services in the United States (US) population using a national database. Few studies have pointed towards role of gender in determining utilization of preventive care service but the issue hasn't been explored using a nationally representative population. **METHODS:** A retrospective, cross-sectional study using 2008 MEPS (Medical Expenditure Panel Survey) data, a nationally representative survey of US population, which reports their pattern of medical care utilization. Guideline recommendations widely used in clinical practice, such as NCEP, American Dental Society, JNC-VII etc., were used to determine appropriate utilization of preventive care services. Descriptive statistics were used to describe the population characteristics while multivariate logistic regression model was built to predict the utilization of the various preventive care services (blood pressure check up, lipid screening, dental check up, sigmoidoscopy/colonoscopy and flu vaccination), using gender as the primary predictor variable, while controlling for age, income, race/ethnicity etc. **RESULTS:** Out of 33,066 respondents, 20,336 met the inclusion criteria for blood pressure check up, 23,058 met the inclusion criteria for dental check up, 19,543 met the inclusion criteria for flu vaccinations, 2,986 met the inclusion criteria for lipid screening, and 4,195 met the inclusion criteria for sigmoidoscopy/colonoscopy screenings. Gender was found to predict utilization of preventive care services. Males were found less likely to utilize blood pressure check up (OR = 0.327, CI = 0.297 −0.359), lipid screening (OR = 0.768, CI =0.694- 0.85), dental check up (OR = 0.634,CI = 0.599-0.671), and flu vaccination (OR = 0.680, CI =0.637- 0.726). In case of sigmoidoscopy and colonoscopy screenings, the disparities were not significant, though utilization was still found to be higher in females. **CONCLUSIONS:** The study helped determine gender disparities in utilizing preventive care services in US population. Utilization of preventive care services needs to be encouraged in males.

PCV102

COMPLICATIONS ARISING DURING HOSPITALIZATION FOR HEMORRHAGIC OR ISCHEMIC STROKE: EVIDENCE FROM A LARGE ADMINISTRATIVE DATABASE

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OBJECTIVES: Limited data exist regarding the economic burden of complications arising during stroke-related hospitalizations. This study sought to document the rate of complications arising during hospitalization (i.e., defined as diagnoses recorded upon discharge but not observed at admission) for hemorrhagic (HS) or ischemic stroke (IS), and describe characteristics of complicated hospitalizations. **METHODS:** Data for hospitalizations with a primary diagnosis of HS (ICD-9-CM codes 430.xx, 431.xx, or 432.xx) or IS (433.x1, 434.xx, or 436.xx) in the 2008 HCUP Michigan State Inpatient Database were analyzed. Incidence of complications developed during hospitalization among patients with a primary diagnosis of HS or IS were assessed, and resource-based outcomes (e.g., total cost, length of stay [LOS]) among, and other characteristics of, stays with complications, compared to uncomplicated hospitalizations, analyzed. **RESULTS:** Of the 1.3 million hospitalizations occurring in Michigan in 2008, 19,065 had a primary diagnosis of HS or IS. Among these, 20.6% (n=3,922) had evidence of ≥1 complications arising during the stay. No differences in patient age (mean: 70.4 versus 70.7 years; p=0.3293) or gender distribution (53% versus 54% female; p=0.3476) between complicated and uncomplicated hospitalizations were observed. The top-5 most frequently observed complications were urinary tract infection, site not specified; hypopotassemia; acute respiratory failure; pneumonitis due to inhalation of food or vomitus; and acute kidney failure, unspecified. Compared to uncomplicated hospitalizations, mean LOS and total costs for complicated stays were significantly greater: 10.5 versus 4.5 days (p<0.0001) and $28,608 versus $10,747 (p<0.0001), respectively. Patients with ≥1 complications spent 2.8 (SD=6.4) days in an ICU, and a greater proportion with complications than without died during hospitalization (11.4% versus 6.6%; p<0.0001). **CONCLUSIONS:** The cost of stroke-related hospitalizations with complications is significant, ~3 times greater than stroke-related hospitalizations without complications. Efforts to improve inpatient stroke management strategies may help lower the incidence of complications, reduce associated costs, and improve patient outcomes.

PCV103

PHARMACIST INTERVENTIONS WITHIN A COMMUNITY PHYSICIAN BASED MEDICAL HOME PRACTICE: DIABETES CLINICAL OUTCOMES

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OBJECTIVES: The patient-centered medical home has been touted as a way to improve patient care and reduce overall healthcare costs. Pharmacists are qualified to provide many of the services that are core to the medical home concept as part of the physician-directed team; however, the pharmacist's role in the medical home has received little attention. **METHODS:** Medical record review was performed on all patients referred to the pharmacist from 7/1/2009 to 12/1/2010 within a community-based, medical home, primary care practice. Patients referred included those non-compliant to prior physician recommendations for lifestyle modifications and/or those not achieving therapeutic goals. Pharmacist interventions included disease state education, therapeutic lifestyle modification and medication counseling, and recommendations for therapy optimization. Primary analyses examined pre/post changes in the subset of patients with diabetes. Outcomes assessed were changes in hemoglobin A1c (HbA1c), lipid fractions, body mass index (BMI), weight, and goal attainment for HbA1c and low-density lipoprotein cholesterol (LDL-C), utilizing paired t-tests, Wilcoxon signed-rank and McNemar's tests as appropriate. **RESULTS:** One hundred-seven patients were referred to the pharmacist, 49 with diabetes. Diabetes patients had a mean age of 57±9 years; 53% were male. HbA1c values decreased from 8.7% to 7.4% (Δ=−1.3%; 95% CI= −0.5% to −2.1%; p=0.003). The percentage of patients achieving HbA1c levels below 8% rose from 50% to 75% (p=0.021) and below 7% rose from 28% to 47%, although this was not statistically significant (p=0.109). Statistically significant decreases were observed in diastolic blood pressure, LDL-C, total cholesterol, triglycerides, BMI and weight. The percentage of patients achieving LDL-C levels <100mg/dL increased from 30% to 74% (p=0.002). **CONCLUSIONS:** Pharmacist involvement in this community based medical home was associated with positive improvements in clinical markers for these diabetic patients. These pilot study results support the inclusion of pharmacists as healthcare team members in future medical home demonstration projects.

PCV104

REAL-WORLD SIDE EFFECT DATA ON CHOLESTEROL MEDICATIONS – OUTPUTS FROM AN ONLINE PATIENT COMMUNITY

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OBJECTIVES: To compare side effect data reported from members of a patient-registry to information contained in the product labeling of four different cholesterol medications each representing a different therapeutic class. **METHODS:** A random sample of U.S. MediGuard.org members who reported taking niacin (Niaspan), fenofibrate (Tricor), simvastatin (Zocor), or colesevelam (Welchol), were invited to complete a validated online treatment satisfaction survey that includes questions related to side effects. MediGuard.org is a free medication monitoring service that provides information to over 2.5 million members in the US, UK, France, Germany, Spain, and Australia. A comparison list of adverse effects and frequencies reported during clinical trials was extracted from the branded package insert for each medication. **RESULTS:** Feedback was obtained from 56 colesvelam, 108 niacin, 216 fenofibrate, and 660 simvastatin patients. Niacin patients had the highest prevalence of side effects (62%), primarily flushing (55%) and pruritis (14%). 23% of colesevelam members reported side effects: the most common were constipation (14%) and bloating/gas (2%). For patients treated with fenofibrate, 16% reported side effects with myalgia (4.2%) and arthralgia (1.4%) being the most common. Similar to fenofibrate, 16% of simvastatin patients reported side effects and again, myalgia (6.2%) and fatigue (2.1%) had the most mentions. Finally, 2% of niacin, 22% of fenofibrate, 29% of simvastatin, and 36% of colesevelam patient reports included side effects not included in the product labeling. **CONCLUSIONS:** On-line patient communities are an emerging resource for confirming adverse events reported during clinical trials and for capturing previously undocumented signals. In tandem to the current post-marketing spontaneous adverse event reporting system, longitudinal patient registries can provide insight not only on the number of adverse events, but also a prevalence rate of those who experience versus those who do not experience side effects.

PCV105

THE INITIATION AND EXTENT OF DOSE TITRATION OF ACE INHIBITORS AND Β-BLOCKERS POST ACUTE MYOCARDIAL INFARCTION: A PROSPECTIVE AUDIT

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OBJECTIVES: The objectives of this audit are: (1) to determine the percentage of patients who are discharged on secondary prevention medication following acute myocardial infarction (AMI) including: aspirin, clopidogrel, ACE inhibitors (ACEi), β-blockers (BB), and statins; (2) to identify what dose each patient is discharged on regarding ACEi and BB and when they are initiated; (3) to explore the relationship between blood pressure and ACEi dose titration; (4) to explore the relationship between heart rate and BB dose titration. **METHODS:** A prospective audit was carried out at the London Chest Hospital (LCH) from June 15-June 28, 2009. All patients who were admitted to the coronary care unit (CCU) with a final diagnosis of AMI were included. Patients were excluded if they died prior to hospital discharge. Patients' demographics, vital signs, drug history, past medical history, drugs during hospital stay and at discharge were collected. **RESULTS:** 33 patients were included in this audit (mean age 59.7 ± 12.7 years, 79% males, 21% females) with an average length of stay of 2.2 days. 88% of the patients were started ACEi and BB on day 2 of hospitalization. For patients receiving ACEi and BB only 41% were titrated towards the optimal dose. 78% of the opportunities to titrate ACEi according to blood pressure and 55% of the opportunities to titrate BB according to heart rate were not taken. At discharge, 100% were prescribed aspirin, statins, and BB; while 97% were prescribed ACEi and clopidogrel. **CONCLUSIONS:** This audit reveals high use of secondary prevention medication at the LCH following AMI. Although there are opportunities for further dose titration prior to discharge, further work is required to establish reasons for missing these opportunities.